UW Sea Grant Resources to Address Lake Superior Coastal Hazards

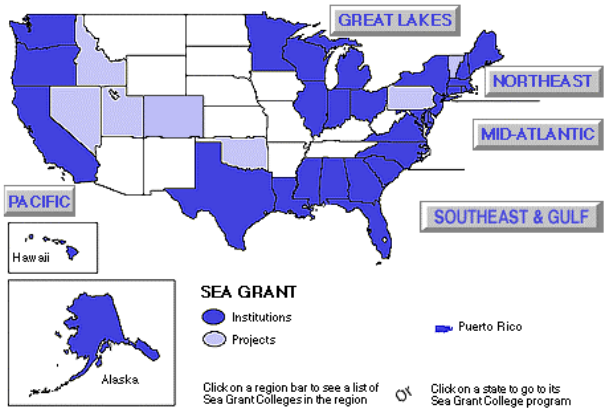
David Hart

University of Wisconsin Sea Grant Institute

September 10-11, 2003

What is Sea Grant?

- Sea Grant is a partnership and a bridge between government, academia, industry, scientists, and private citizens to help Americans understand and sustainably use our precious Great Lakes and ocean waters for long-term economic growth.
- In short, Sea Grant is an agent for scientific discovery, technology transfer, economic growth, and public education as they involve coastal, ocean, and Great Lakes resources.

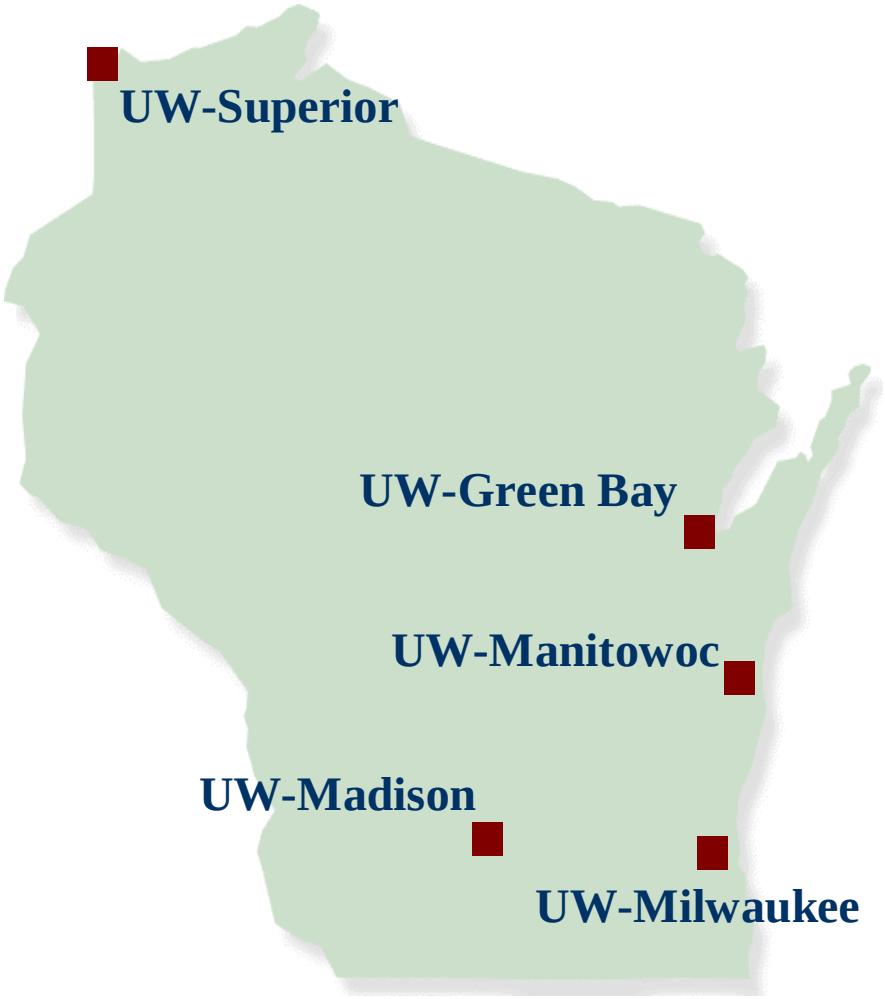


Sea Grant Themes

- Aquaculture
- Biotechnology
- Coastal Hazards
- Coastal Communities & Economies
- Digital Ocean
- Marine and Aquatic Science Literacy
- Fisheries
- Ecosystems & Habitats
- Urban Coast
- Seafood Science & Safety

UW Sea Grant Advisory Services Organization

- Specialists provide service statewide in one or two subject areas. Four specialists also have the responsibility to provide general support to a multi-county area through field offices located on University of Wisconsin campuses.
- For these four specialists, accountable projects represent 2/3 of workload, while the remaining 1/3 includes responding to inquiries and requests for assistance.



UW Sea Grant Advisory Services Staff

Jim Hurley (*Program Leader*)
Aquatic Sciences Center, UW-Madison

Phil Keillor – retired – part time (*Coastal Engineering Specialist*)
Aquatic Sciences Center, UW-Madison

David Hart (*GIS Specialist*)
Aquatic Sciences Center, UW-Madison

Fred Binkowski (*Aquaculture Specialist*)
UW-Milwaukee WATER Institute

Vacant Position
UW-Superior

Phil Moy (*Fisheries and Nonindigenous Species Specialist*)
UW-Manitowoc

Jim Lubner (*Education and Water Safety Specialist*)
UW-Milwaukee WATER Institute

Vicky Harris (*Water Quality and Habitat Restoration Specialist*)
UW-Green Bay

UW Sea Grant Advisory Services Superior Field Office

- Qualifications Preferred: Experience with climate change issues (modeling, interpretation), especially with application to coastal engineering or biotic effects.
- Applications were due on September 5 and the anticipated start date for the position is October 15.
- Superior Field Office:
  - Location: 143 Sundquist Hall, UW- Superior
  - Phone: (715) 394-8472

Developing a Dynamic and Distributed GIS to Support Coastal Management Along the Lake Superior Coast of Wisconsin

David Hart

University of Wisconsin Sea Grant Institute

September 10-11, 2003

Introduction

- Jurisdiction over the protection and management of Lake Superior coastal resources in Wisconsin is distributed among many agencies at various levels of government.
- Development pressure along Lake Superior has increased in recent years.
- Communication and information sharing among these jurisdictions, agencies, and other interested parties are critical to effective coastal management.

Introduction

- Recent breakthroughs in technology allow the development of integrated and interoperable geographic information systems (GIS) that hold great promise to improve multi-jurisdictional coastal resource management.
- A research and outreach project, funded by NOAA, seeks to promote the development of a “dynamic and distributed” GIS to support integrated coastal management along the Lake Superior coast of Wisconsin.

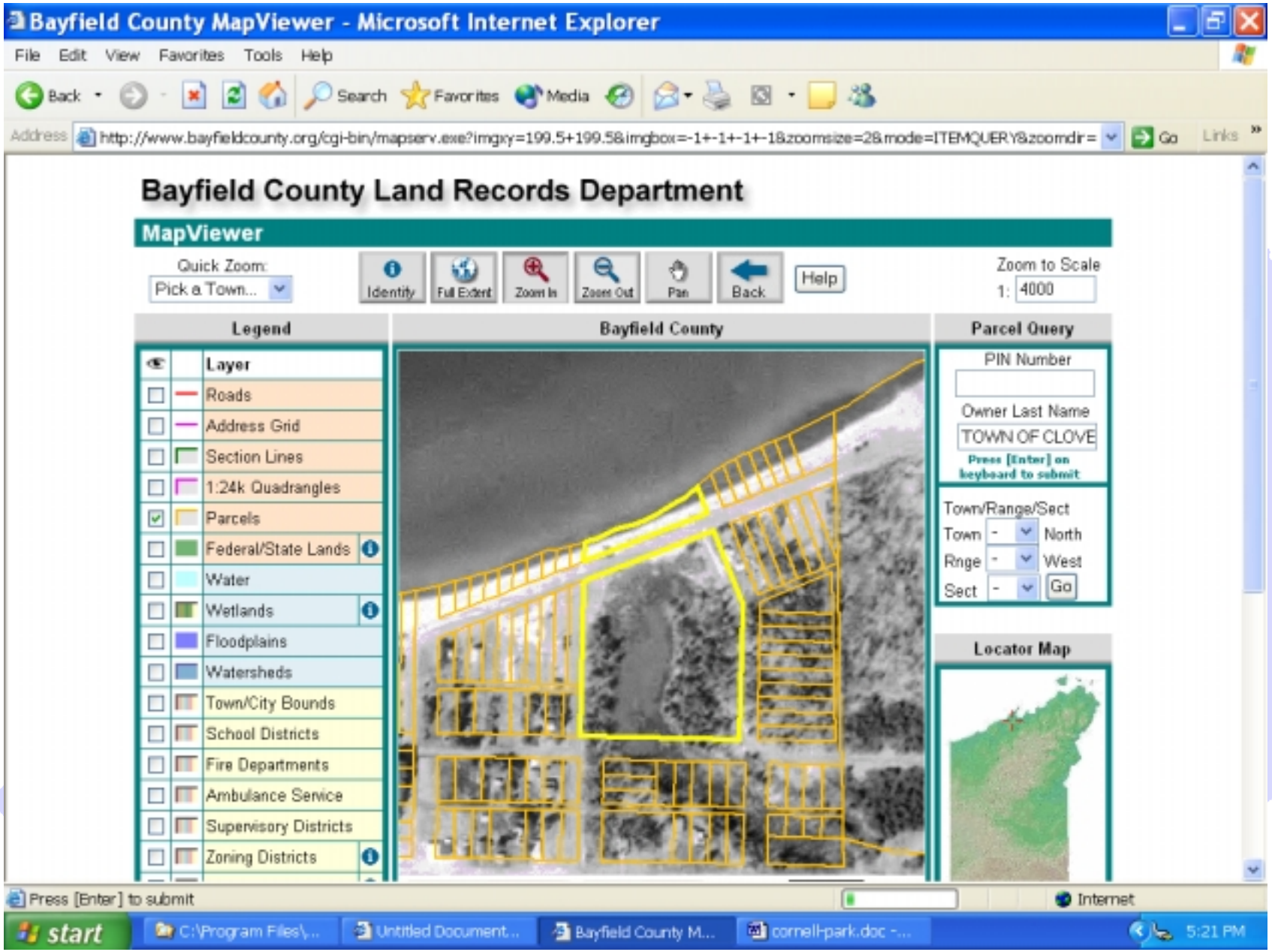
Introduction

- A “dynamic and distributed” GIS is one where custodians, whether they be local, regional, state, federal, academic, or non-profit, maintain and provide access to the most current mapping data and multiple remote users can access and integrate the maps in real-time from multiple sources.
- Such a system could help ensure that:
  - digital mapping data needed to address dynamic coastal issues stay up-to-date and relevant
  - the widest range of potential users of coastal GIS data have access for their specific applications.

Project Tasks

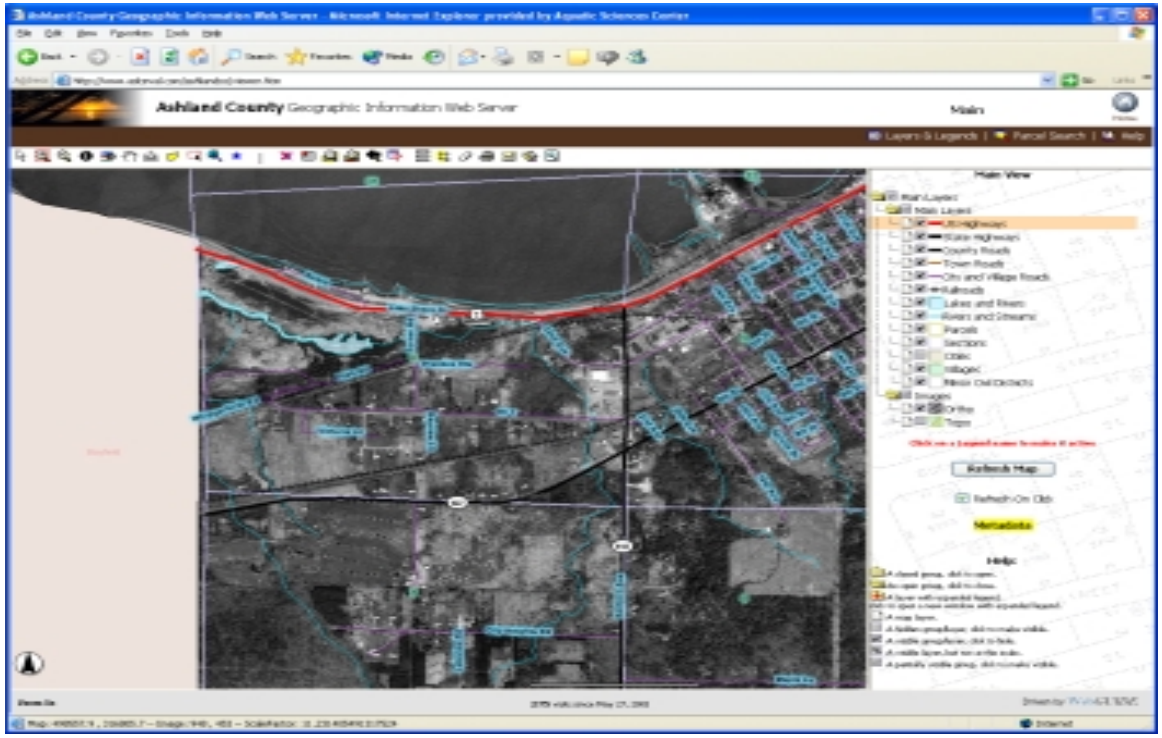
- The first project task involves the development of web mapping interfaces and tools to support public access to local government GIS data.
- One model is the Bayfield County Land Records Viewer.
- Last year, Bayfield County worked with Mark Miller of Benchmark GIS to implement the Land Records Viewer using the MapServer software developed by the University of Minnesota.

COASTAL EROSION



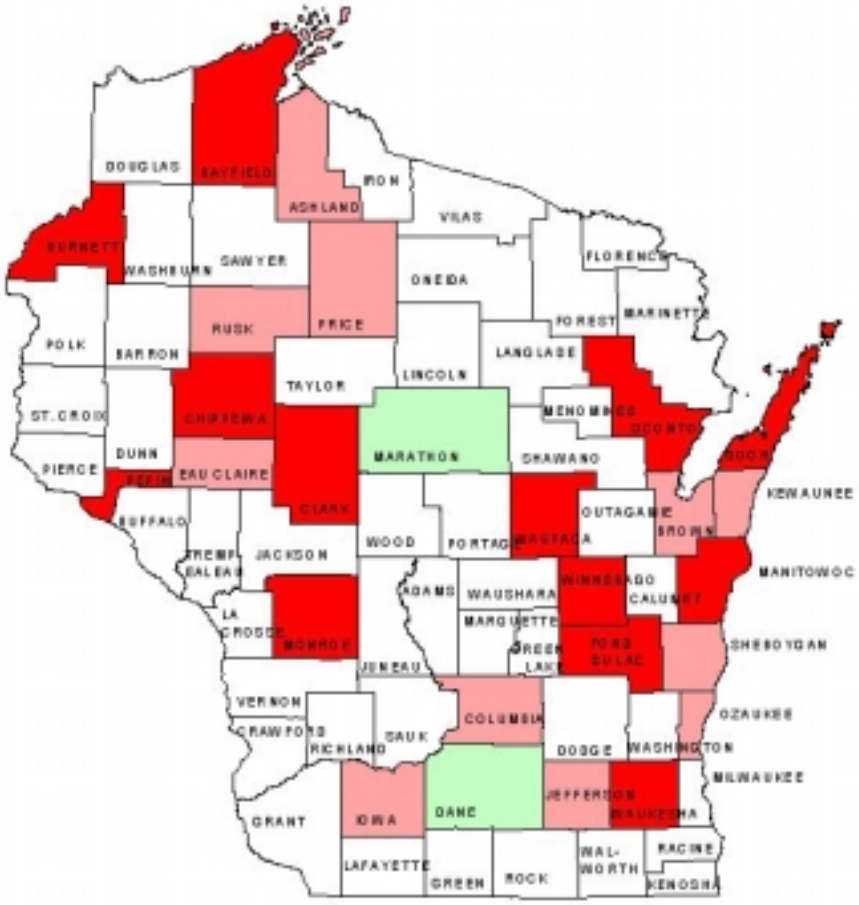
Project Tasks

- Another model is Ashland County, which has hired Applied Data Consultants of Eau Claire to develop a web mapping site using the Arc Internet Map Server (IMS) software.



Project Tasks

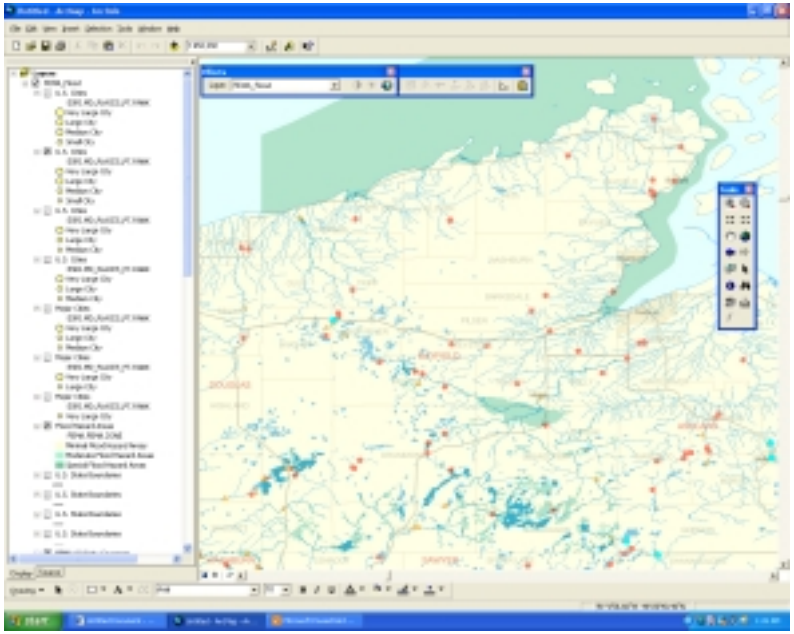
- There are 13 counties in Wisconsin with publicly-accessible web mapping sites and at least another 13 in development or with Intranet (non-public accessible) web mapping sites.

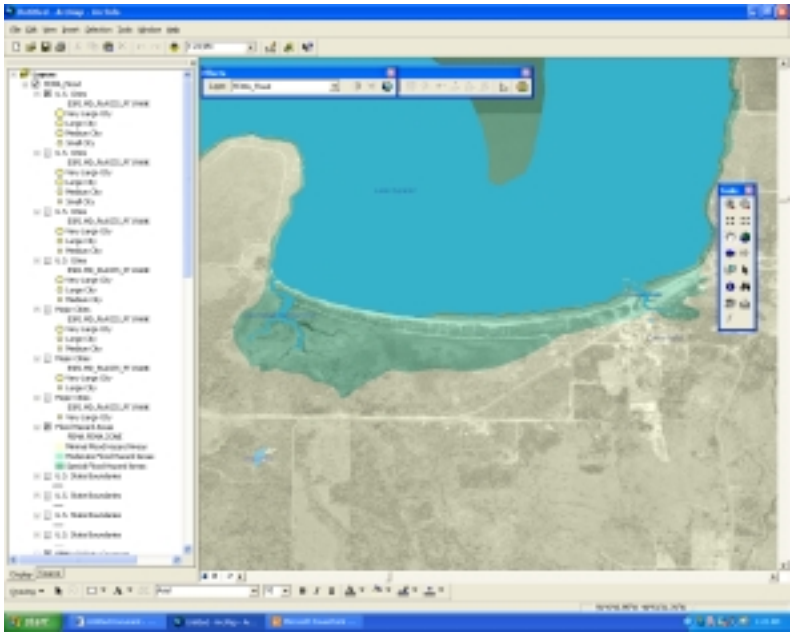


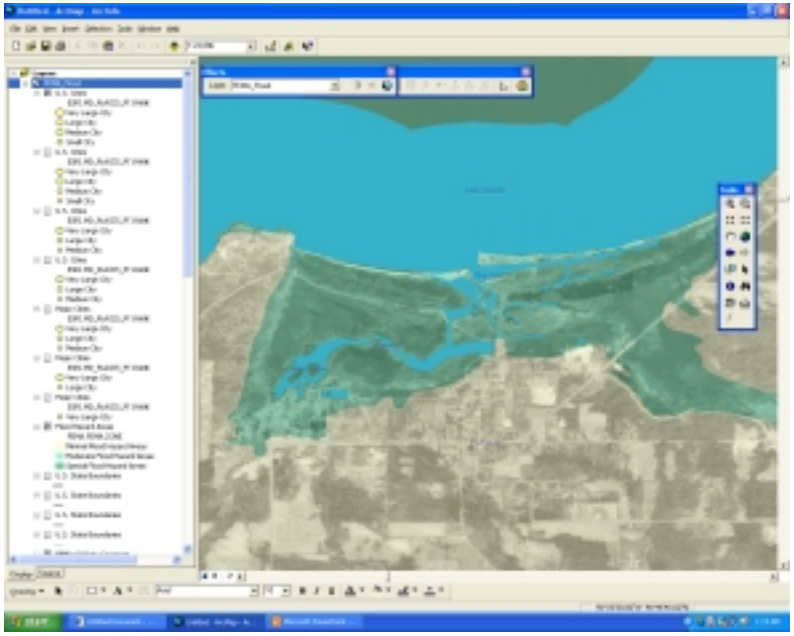
Project Tasks

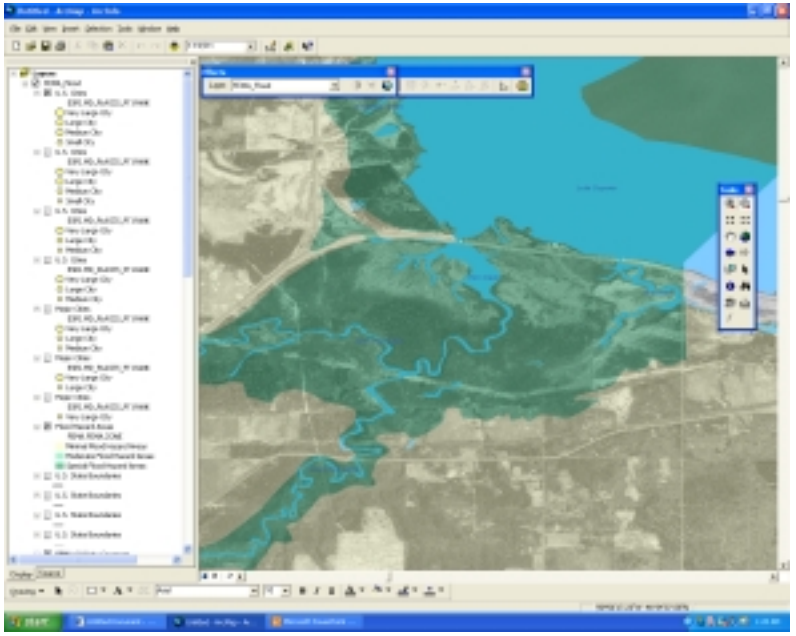
- The second task concerns the implementation of web mapping services that allow integration of disparate GIS data across political boundaries.
- Rather than developing stand-alone local government web mapping sites, the project will draw upon the principles and protocols of the Open GIS Consortium to link local web mapping services and build an interoperable, “bottom-up” coastal GIS.

COASTAL EROSION









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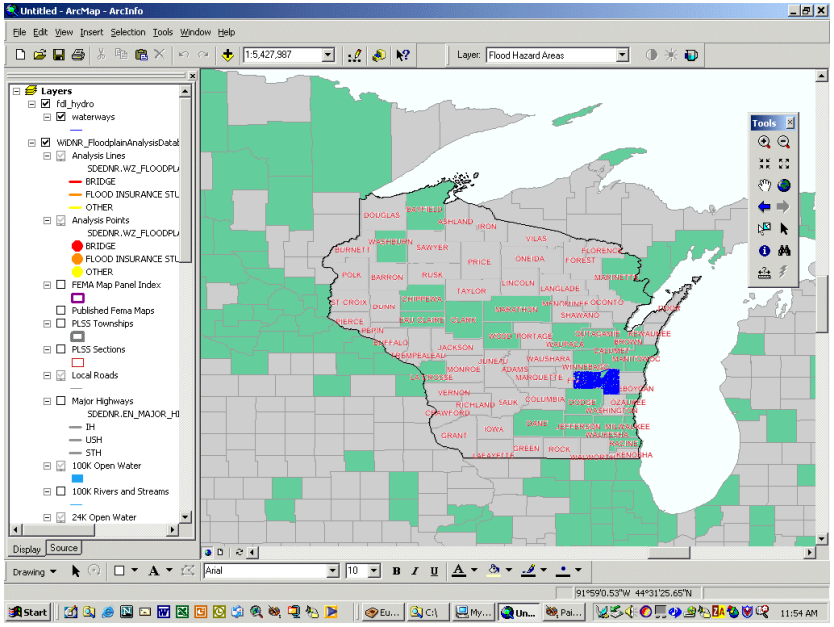

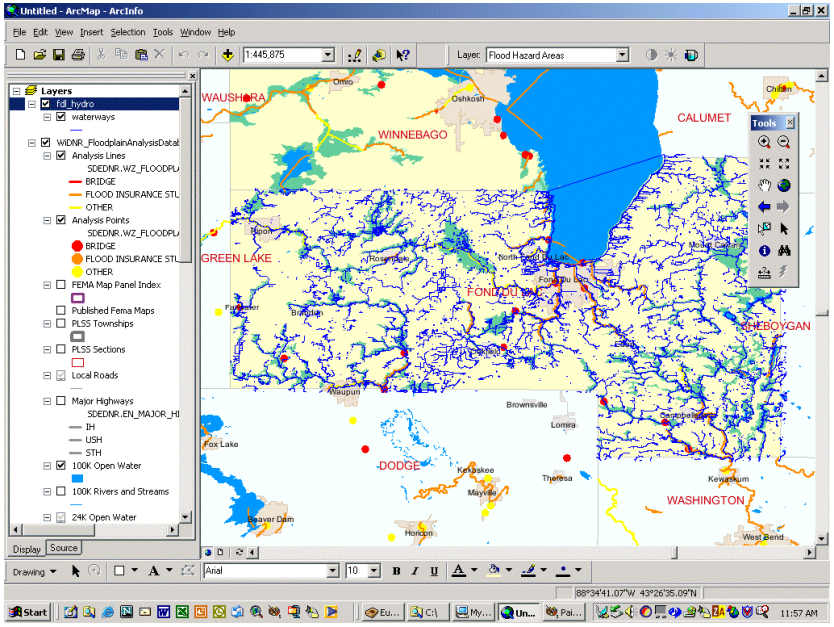

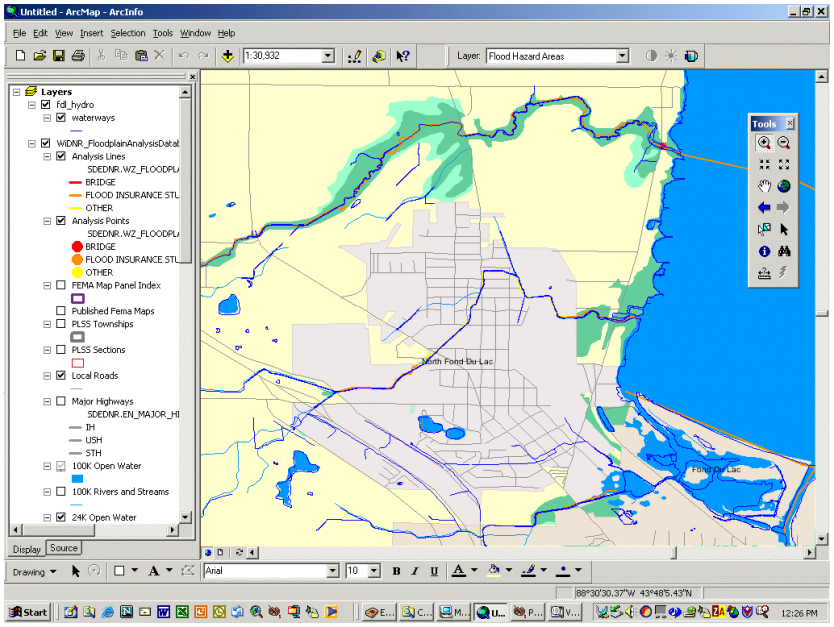

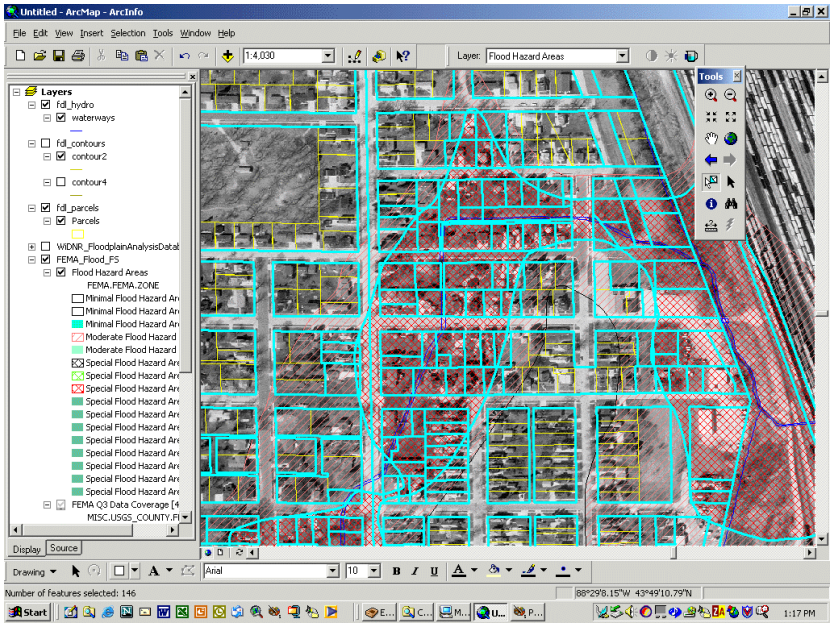

Project Tasks

- The third task builds upon a successful coastal GIS training program developed by University of Wisconsin Sea Grant Institute and the Land Information and Computer Graphics Facility (LICGF) at the University of Wisconsin-Madison to teach local government professional staff, citizens, and other coastal constituents how to use these integrated web mapping services to address coastal hazards and comprehensive planning.

Project Partners

- University of Wisconsin (Sea Grant/LICGF)
- JumpStart GIS
- Ashland, Bayfield, Douglas, and Iron Counties
- Northwest Wisconsin Regional Planning Commission
- Wisconsin Coastal Management Program
- NOAA Coastal Services Center

Project Timeline

- Sept. 2003 through Apr. 2004 - Design and implement public access web mapping sites.
- Jan. 2004 through Aug. 2004 - Facilitate interoperable web mapping services at several local, regional, state, and federal agencies.
- June 2004 through Nov. 2004 - Conduct workshops for local government officials and interested citizens describing the use and benefits of interoperable web mapping services.